UNITED STATES PATENT AND TRADEMARK OFFICE

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10/772,642	02/05/2004	Roger Keith Stager	ALA-PT014	5773

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EXAMINER
TSUI, DANIEL

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>02 April 2007</u>.

2a)☒ This action is **FINAL.**   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-24</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-6 and 12-24</u> is/are rejected.

7)☒ Claim(s) <u>7-11</u> is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Double Patenting

1.   The double patenting rejection for claims 1-11, and 13-23 have been withdrawn.

2.   Claims 12 and 24 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of copending Application No. 10/772,017. Although the conflicting claims are not identical, they are not patentably distinct from each other because both claims are directed to slectigin a snapshot and loading the snapshot. Claim 1 of '017 includes the same scope as claims 12 and 24 of the present application with further limitations and so claims 12 and 24 would have been obvious over the reference claim.

   This is a <u>provisional</u> obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Specification

3.   The objection to the title has been withdrawn in view of the amendment.

Claim Rejections - 35 USC § 112

4.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5.   Claims 13-24 rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The evidence that 35 U.S.C. 112, sixth

paragraph, has been invoked is rebutted by the evidence in the specification. The means language presented in the claims is not accompanied by corresponding structure in the specification. In this case, one of ordinary skill in the art could interpret the claims as software *per se*, (i.e. software means the perform the scanning, comparing, storing, or copying operations), or the implicit structure, (i.e. computer hardware) that used in performing the operations. As such, the claims are indefinite and fail to point out the applicant's invention.

Claim Rejections - 35 USC § 101

6.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 13-24 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Because the structure associated with the means is no specified by the specification, the claimed means can be interpreted to correspond only to software per se without any accompanying structure. A claim towards software per se does not fall within a statutory class of invention as it is not a process, machine, manufacture, or composition of matter.

Claim Rejections - 35 USC § 102

7.   The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8.   Claims 1, 2, 13, and 14 are rejected under 35 U.S.C. 102(e) as being anticipated

by Crockett (US 6,578,120).

As per claims 1 and 13, Crockett teaches a method and a system for

synchronizing a secondary volume with a primary volume that comprises the steps and

means for:

scanning a region of the primary volume (see column 8, lines 55-57);

comparing the scanned region with a corresponding region of the secondary

volume (see column 8, line 67 to column 9, line 2, the addresses of the regions are

compared);

storing an identification of the scanned region in a compare delta map when the

comparing step results in a discrepancy between the scanned region and the

corresponding region (record sets, see column 8, lines 28-30 and lines 61-63);

copying data from the primary volume to the secondary volume, using the

compare delta map as a guide to locate the data to copy (see column 8, lines 39-41).

As per claims 2 and 14, the reference teaches repeating the scanning,

comparing, and storing steps for each region of the primary volume (see column 9, line

10).

9.   Claims 12 and 24 are rejected under 35 U.S.C. 102(e) as being anticipated by

Colgrove (US PGPub 2005/0144407).

Colgrove teaches a method and system for restoring a primary volume from a

secondary volume in a continuous data protection system that comprises the steps and

means for:

selecting a snapshot of the primary volume to be restored (see paragraph 66,

lines 6-7); and

loading the snapshot from the secondary volume to the primary volume (see

paragraph 66, lines 8-13).

Claim Rejections - 35 USC § 103

10.   The text of those sections of Title 35, U.S. Code not included in this action can

be found in a prior Office action.

11.   Claims 3, 4, 15, and 16 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Crockett in view of Yamagami (US 7,111,136).

Crockett teaches a method and system for synchronizing a secondary volume

with a primary volume in a continuous data protection system as applied to claims 1 and

13 above.

As per claims 3 and 15, Crockett does not teach creating a present delta map or

creating a point in time map. Yamagami teaches a method and system that uses

present delta maps (journals; see figure 5 and column 8, lines 45-47) to cover the

changes made to a primary volume from the time of a previous delta map in a delta map

chain (a sequence of journal entries, see figure 5). Yamagami also teaches creating a

point in time map (snapshot; see figure 5 and column 8, lines 51-53, and line 61) based

upon the present delta map. Therefore it would have been obvious at the time the invention was made to a person of ordinary skill in the art for the method and system taught by Crockett to create delta maps so each update can be tracked in sequence and to create a point in time map based on the delta maps so that all the updates can be combined to show a snapshot of the updated data volume. It would have also been obvious for the creating steps to be performed prior to the scanning step so that a comparison can be made during the scanning step of the primary volume to the update snapshot.

As per claims 4 and 16, it would have been obvious at the time the invention was made to a person of ordinary skill in the art to use the PIT map to determine which region of the secondary volume is compared to the scanned region of the primary volume so that the data on both volumes can be updated to reflect the state of the PIT map.

12.   Claims 5, 6, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crockett in view of Viswanathan (US 6,654,912).

Crockett teaches a method and system for synchronizing a secondary volume with a primary volume in a continuous data protection system as applied to claims 1 and 13 above. Crockett does not teach using a dirty region log to optimize the step of scanning and comparing. Viswanathan teaches using a dirty region log to keep track of which blocks in a volume have been changed so that a mirroring operation can be optimized to only copy the "dirty" files (see column 1, lines 55-59). Therefore it would

have been obvious at the time the invention was made to a person of ordinary skill in

the art to optimize the scanning and comparing by using a dirty region log, wherein only

those regions of the primary volume that are listed in the dirty region log are scanned

and compared so that system resources will not be wasted on unnecessarily scanning

and comparing unmodified regions. The dirty region log would include only the regions

of the primary volume that have been modified but not yet committed to the secondary

volume since these are the dirty regions that the synchronizing would need to be

performed on.

Allowable Subject Matter

13.   Claims 7-11 are objected to as being dependent upon a rejected base claim, but

would be allowable if rewritten in independent form including all of the limitations of the

base claim and any intervening claims.

Winokur (US 6,625,704) teaches intercepting write commands that are receiving

during a copying process and copying them to the secondary volume out-of-order (see

column 2, lines 22-38). Squibb (US 6,301,677) teaches halting incoming events during

a mirroring process. The prior art of record does not teach or suggest **revising** the

compare delta map by **removing** any changes made to the primary volume during a

scan interval. The prior art also does not teach or suggest the use of a **scan delta**

map, host change delta map, or **fix-up delta map**.

Response to Arguments

14.   Applicant's arguments filed April 2, 2007 have been fully considered but they are

not persuasive.

In response to Applicant's arguments regarding rejections made under 35 U.S.C.

§ 112 and 35 U.S.C. § 101, the Examiner points out MPEP § 2181(II) which says, "If

one employs means plus function language in a claim, one must set forth in the

specification an adequate disclosure showing what is meant by that language. If an

applicant fails to set forth an adequate disclosure, the applicant has in effect failed to

particularly point out and distinctly claim the invention as required by the second

paragraph of section 112." In re Donaldson Co., 16 F.3d 1189, 1195, 29 USPQ2d 1845,

1850 (Fed. Cir. 1994) (in banc). As explained in the rejection above, the specification

does not provide adequate disclosure as to what is meant by the means plus function

language. By the broadest reasonable interpretation, the claims can be construed to

refer to software components *per se* and as such would not be statutory.

In regards to Crockett, the Applicant argues that the reference does not teach

"comparing the scanned region with a corresponding region of the secondary volume"

because Crockett only teaches comparing the addresses. The Examiner points out that

the addresses compared by Crockett are used as references to the scanned region and

the corresponding region. Furthermore, the broadest reasonable interpretation of

"comparing the scanned region..." would include only comparing the addresses that are

references to the regions themselves. This comparison of addresses is used to

determine any differences between the regions caused by recent updates.

The Applicant also argues that Crockett does not teach the use of a compare

delta map but stores the actual changes rather than identification of a region. The

Examiner points out that in paragraph 39, the Applicant defines delta maps as "data

structures that keep track of data changes between two points in time." The record sets

taught by Crockett serve to perform this function. Furthermore, storing the actual

changes would necessitate storing information identifying the regions to where the

changes were made so that the changes can be duplicated on the second volume. As

such the record set would include storing identification of the scanned region as is

required by the claim.

In regards to Colgrove, the Applicant argues that the reference does not teach

selecting a snapshot of the primary volume to be restored and loading the snapshot

from a secondary volume to the primary volume. The Examiner points out that in

establishing a replication relationship, the method taught by Colgrove selects a node

that is to receive the replicated snapshot (i.e. a primary volume to be restored) and

snapshot information is sent from another volume to be replicated (i.e. loading the

snapshot). It would not matter which volume is considered to be the "primary" volume

or the "secondary" volume.

15.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel Tsui whose telephone number is (571)270-1022. The examiner can normally be reached on M through F, 8:00-4:30 (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sanjiv Shah can be reached on (571)272-4098. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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GARY PORTKA
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